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which penetrates into the substratum and thereby protects the sporophyte still more effectively. With this type of perigynium the perianth is almost invariably absent.

The characters noted above are usually sufficient to distinguish the genera of the Jungermanniaceae. The antheridial branches and the sporophytes occasionally yield additional characters of interest. Both of these structures, however, are likely to be uniform or nearly so throughout large groups of genera, and their characters, therefore, are more frequently tribal or even ordinal in value rather than generic. Under the circumstances it is hardly necessary to discuss them at the present time. YALE UNIVERSITY.

ADDITIONS TO THE BRYOPHYTIC FLORA OF WEST VIRGINIA.

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The "Preliminary Catalogue of the Flora of West Virginia," published by Dr. C. F. Millspaugh in 1892 (W. Va. Exp. Stat. Bull. No. 24, pp. 311-537), contained a list of eighty-three species and varieties of mosses and twenty-seven of hepatics, collected at a few points, mostly in the vicinity of Morgantown, in Monongalia County. A flora of the state embodying the results of later collections was published by Dr. Millspaugh in collaboration with Mr. L. W. Nuttall, who had made extensive collections and studies about Nuttallburg, in Fayette County (Publications Columbian Field Museum, Bot. Series, Vol. 1, pp. 65-276, 1896). In this list were noted six additional species of mosses and five of hepaticae. For both lists, as is explained in the introduction to the latter, the bryophytes had been gathered spasmodically and incidentally to the investigation of other plants.

I have seen two papers of later date listing additions to the West Virginia flora, viz.: "Some Plants of West Virginia," by E. L. Morris (Proc. Biol. Soc. Wash., Vol. XIII., pp. 171-182, 1900), and "Some New and Additional Records in Flora of West Virginia," by C. L. Pollard and W. R. Maxon (Proc. Biol. Soc. Wash., Vol. XIV., pp. 161-163, 1901). Of these the former mentions two additional hepaticae and four mosses, two of which are included in the previous lists. The latter includes as new, two hepatics and seven mosses, one a repetition from the preceding paper.

From collections made mostly during the fall of 1903 and spring of 1904 in the vicinity of Morgantown I am able to add the following. Those recorded from near Masontown are from Preston County; the others, unless expressly stated, from Monongalia County. The region of Chestnut Ridge was most productive in bryophytes, the territory westward being very poor in species. Chestnut Ridge enters West Virginia from Pennsylvania, its direction slightly southwesterly, its altitude approximately 2,000 feet, and represents, so far as Pennsylvania and northern West Virginia are concerned, the extreme western ridge of the Allegheny system. East of Morgantown this ridge is cut by the valleys of Decker's Creek and the Cheat River, and the richest collecting grounds are along the mountain streams tributary to these rivers. Especially are the steams descending the western side of the ridge characterized by rapid falls and the presence in their beds of many

large sandstone boulders, covered commonly with a luxuriant growth of hepatics. Tibbs Run, which joins Decker's Creek at Dellslow, was explored by Dr. Millspaugh. Quarry Run, a mountain tributary of Cheat River, proved of no less interest, duplicating in the main the species of the other, even to the presence of the uncommon hepatic *Herberta adunca* (Dicks.) S. F. Gray.

The species not previously observed are the following:

MUSCI.

Sphagnum quinquefarium (Braith.) Warnst. Blister Swamp, Randolph Co. (A. H. Moore, Sept., 1904).

Sphagnum cymbifolium Ehrh., var., *squarrosulum* Bryol. Germ. Specimens observed by Tibbs Run as well as Dr. Millspaugh's from the same locality preserved in the Experiment Station herbarium show strongly marked the varietal characters. Typical forms of *S. cymbifolium* occurred at another point in the valley of Decker's Creek, and I have a specimen collected by Mr. A. H. Moore in Blister Swamp, Randolph Co.

Andreaea rupestris Hedw. Rocks at summit of Ridge, Cheat View.

Pleuridium alternifolium Brid. Ground on Dorsey's Knob, near Morgantown.

Dicranella rufescens (Turn.) Schp. Bank by road, valley of Decker's Creek, near Lick Run.

Dicranella varia (Hedw.) Schp. Near road, in the vicinity of Easton.

Dicranum montanum Hedw. Decayed spot in tree, near Dellslow.

Dicranum viride (S. & L.) Lindb. From fallen tree, near Quarry Run

Grimmia apocarpa (L.) Hedw. Rocks in brook, Tibbs Run.

Racomitrium aciculare (L.) Brid. Tibbs Run.

Hedwigia ciliata Ehrh., var. *secunda* Schp. Rocks in Tibbs Run. Nicely fruited specimens on boulders near Dry Run. The varietal characters strongly marked.

Drummondia clavellata Hook. Tree, near Easton.

Ulota Hutchinsiae (Sm.) Schp. Rocks in Tibbs Run.

Webera prolifera (Lindb.) Kindb. With *Dicranella rufescens*, near Lick Run. Not fruited.

Bryum capillare L. Quarry Run.

Bryum caespiticium L. Near Dry Run.

Mnium affine Bland. Dry Run.

Fontinalis Dalecarlica Bryol. Eur. By Tibbs Run. Not fruited.

Hookeria Sullivantii C. M. This species was collected at a few points in Tibbs Run. No fruit was in evidence, but the leaves bore regularly at the tips a number of clavate gemmae.

Thamnium Allegheniense (C. M.) Bryol. Eur. By Tibbs Run.

Leskea obscura Hedw. Base of tree, near Morgantown.

Anomodon obtusifolius Br. & Sch. Base of tree, by Decker's Creek, near Morgantown.

Leptodon trichomitrium (Hedw.) Mohr. Tree near Cheat River, at Ices Ferry. Also near Masontown:

Thuidium scitum (Beauv.) Aust. Rocks by Tibbs Run.

Climacium Americanum Brid., var. *Kindbergii* R. & C. "Glades" near Masontown. The swampy glades furnish an environment quite similar to that of the New England coastal region, where this form flourishes.

Pyloisia intricata (Hedw.) Byrol. Eur. Trees, near Cheat River and Decker's Creek. Probably less common here than *P. velutina*, which was noted by Dr. Millspaugh.

Brachythecium luteum (Brid.) Bryol. Eur. Ground near Quarry Run. Specimens of this species were also collected further north on Chestnut Ridge, near Mt. Pleasant, Pa.

Brachythecium rivulare (Bruch.) Byrol. Eur. Ground near Quarry Run.

Rhyncostegium serrulatum (Hedw.) Jaeg. Ground about Morgantown. This is a common species of Chestnut Ridge, near Mt. Pleasant, Pa.

Rhapidostegium cylindrocarpum (C. M.) Kindb. Decayed wood, near Quarry Run.

Hypnum reptile Rich. Ground near Tibbs Run.

Hypnum uncinatum Hedw. Quarry Run.

Hylocomium brevirostrum (Ehrh.) Bryol. Eur. Not uncommon in deep brook ravines, Tibbs and Quarry Run. Fruiting at latter. Beautifully fruiting in gorge of Cucumber Falls, at Ohiopyle, Pa.

HEPATICAEE.

Cephalozia serriflora Lindb. Rotten wood, near Tibbs Run. This is possibly the same as *C. Virginiana* reported by Pollard and Maxon (Sc. A. W. Evans, in *Rhodora*, Vol. VI., pp. 173-174).

Frullania Brittoniae Evans. Trees near Cheat River, by Ices Ferry. Also near Masontown.

Frullania Eboracensis Gottsche. Trees by Decker's Creek, near Morgantown.

Frullania squarrosa (R. Bl. & N.) Dumort. Same locality as last.

Jungermannia lanceolata L. Rocks, in Tibbs Run.

Lejeunea cavifolia (Ehrh.) Lindb. A small form growing on rocks in Tibbs Run is referred by Dr. Evans to this species.

Lepidozia sylvatica Evans (Sc. *Rhodora*, Vol. VI., pp. 186-189). Ground near Tibbs Run.

Lophocolea bidentata (L.) Dumort. Rocks with mosses, by Quarry Run.

Lophozia Marchica (Nees.) Steph. Specimens from wet place by road, near Easton, are so named by Dr. Evans.

Nardia crenulata (Smith) Lindb. Springy place, near Easton.

Nardia crenuliformis (Aust.) Lindb. Few specimens from rocks in Tibbs Run.

Odontoschisma denudatum (Mart.) Dumort. Decaying stumps and logs by Tibbs Run.

Odontoschisma prostratum (Swartz.) Trevis. Rocks beside Tibbs Run. *O. Spagni* listed by Millspaugh and Nuttall is evidently referable to one or the other of these species. (Sc. Evans on *Odontoschisma*, Bot. Gaz., Vol. XXXVI., pp. 321, 348).

Plagiochila Sullivantii Gottsche. Earth in vicinity of Quarry Run.

Sphenobolus Michauxii (Web.) Steph. Vertical rocks at Cheat View.

Hanover, N. H.